TM254308P

Reg. No :.....

Name :.....

MASTER'S DEGREE (C.S.S) EXAMINATION, MARCH 2025

2020, 2021, 2022 ADMISSIONS SUPPLEMENTARY

ZOOLOGY SEMESTER IV - ELECTIVE COURSE

ZO4E01TM20 - Molecular Biology

Time : 3 Hours **Maximum Weight : 30**

Part A

I. Answer any Eight questions. Each question carries 1 weight **(8x1=8)**

1. Give an account on the salient features of B-DNA.
2. Give an account on G-tetraplex.
3. Give an account on direct DNA repair.
4. Compare the three models of replication.
5. Write notes on different regions of the sigma factor.
6. Write a short note on proofreading mechanisms done by RNA polymerase.
7. Define the terms (a) Hyperchromic shift (b) Hypochromic shift (c) Bathochromic shift (d) Hypsochromic shift.
8. Define operon.
9. Comment on accommodation.
10. Compare and contrast between Shine-Dalgarno and Kozak sequence.

Part B

II. Answer any Six questions. Each question carries 2 weight **(6x2=12)**

11. Write a note on hypochromicity and Tm.
12. Write a note on mismatch repair in prokaryotes and eukaryotes.
13. Explain the functions of different subunits of DNA Polymerase III holoenzyme.
14. Describe the types of proof reading mechanisms operating in prokaryotes.
15. Give an account on RNA polymerase in eukaryotes.
16. Comment on RNAi.
17. Explain the mechanisms of RNA editing.
18. Explain the prokaryotic and eukaryotic ribosomes in detail.

Part C

III. Answer any Two questions. Each question carries 5 weight **(2x5=10)**

19. Write an essay on the different DNA repair mechanisms operating in prokaryotes and eukaryotes.
20. Write an essay on the mechanism of nuclear export of mRNA. Add a note on the mRNA stability.
21. Explain the regulation of gene expression in *E.Coli* taking Lactose operon as example.
22. Give a detailed account on prokaryotic translation.